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PREDICTING SMOKING CESSATION
IN PREGNANT LATINA AND WHITE WOMEN

BY

IVORY ROBERTS CLARKE

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS
IN
PSYCHOLOGY

THE UNIVERSITY OF RHODE ISLAND

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Abstract

This study examined cigarette smoking patterns in a low-income sample of pregnant women. The total sample included 142 white women and 56 Latinas. The participants were recruited as current smokers and recent quitters who received prenatal care at six urban health clinics in a northeastern locale. Recent quitters were women who had quit smoking less than one year prior to contact. Predictor variables were examined for both Latinas and white women in order to identify possible differences between the two groups. These variables focused on measures of addiction, social and familial predictors, and demographic information.

Several quantitative procedures were used to analyze the data. Results revealed that Latinas were as likely to be current smokers as their white counterparts. No difference was found between the smoking rates of the parents of Latina and white participants, but there was a significant difference in the smoking rates of their partners. White women were more likely to have partners who smoked than Latina women. A significant difference was also found in the level of addiction to cigarettes between white and Latina participants. White women smoked significantly more cigarettes per day than Latinas (14 per day versus 9.7 cigarettes). Findings showed that although Latinas smoked fewer cigarettes per day than their white counterparts, there were comparable ratios of current smokers and recent quitters in both groups. Although white and Latina participants were equally educated (10.5 years of school), white participants had significantly higher incomes than their Latina counterparts. Specifically, white women were more likely to have incomes of \$25,000 or more compared to Latinas who almost exclusively had incomes of less than \$25,000.

Suggestions for future research are presented and implications of these findings are discussed.

Acknowledgment

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Statement of the Problem

The harmful effects of cigarette smoking during pregnancy have been well documented (U.S. Department of Health and Human Services, 1991; Floyd, Rimer, Giovino, Mullen, & Sullivan, 1993). Although cigarette smoking presents many well documented risks, the dangers of smoking multiply during pregnancy because of its adverse effects on both mother and child. In this context, effects on fetal development include low birth weight, respiratory difficulties, premature delivery, vulnerability to colds and asthma, and higher incidence of neonatal and postnatal deaths. Yet, in spite of the numerous threats that smoking poses to pregnant women and their fetuses, it is estimated that 25% of women smoke during pregnancy (Floyd, Rimer, Giovino, Mullen, & Sullivan, 1993).

An analysis of Hispanic Health and Nutrition Examination Survey data revealed that cigarette smoking among Latino groups is increasing while smoking among non-Hispanic whites is decreasing (Ramirez & Gallion, 1992). Interventions that have worked well for non-Hispanic white populations have previously been assumed to be equally appropriate for individuals from ethnic minority populations (King, Borrelli, Black, Plato, & Marcus, 1997). However, it is now acknowledged that there is a tremendous need to develop smoking cessation interventions that are tailored for distinct ethnic groups, as well as to address unique differences that may exist among each population's subgroups.

Latinos are the fastest growing population in the United States and are expected to outnumber other ethnic minorities before the year 2020 (Burgos-Ocasio, 1996; U.S.

Department of Commerce, Bureau of the Census, 1988). Such estimates are based upon the increasing number of Spanish speaking individuals who relocate to the United States mainland from Puerto Rico, Mexico, South America, and Central America, as well as the high birth rates among various Latino subgroups. The rapidly increasing number of Latinos who live in the United States points to the need for more medical and research communities to address health issues that affect Latino populations. National Health Interview Survey data indicated that approximately 19% of Latinas smoke who are of reproductive age (Centers for Disease Control, 1994). As a result, it is important to create smoking interventions that educate this group, and particularly those who are pregnant, about the risks of cigarette smoking.

One purpose of this study is to investigate cigarette smoking in a Latina and non-Latina white low-income sample of pregnant women who presented at six urban health clinics. The study will also identify which variables influence smoking outcomes in each cultural group. This is an important step in the process of comprehending cultural differences that impact the effectiveness of smoking interventions. This study will focus on variables that reveal measures of addiction, social and familial predictors, and demographic information. Predictor variables will be examined for both Latino and non-Latino whites in order to identify possible culturally relevant differences. Recommendations for ethno-culturally appropriate smoking cessation interventions will be made based on results of careful investigative work.

Justification of the Study

For almost two decades, cigarette smoking has been cited as the leading cause of preventable morbidity and mortality in the United States among all ethnic groups

(Surgeon General, Department of Health and Human Services, 1984). In spite of campaigns to decrease the prevalence of smoking in this country, research has revealed that while smoking has decreased among white smokers, it has simultaneously increased in Latino populations (Ramirez & Gallion, 1992). Moreover, adverse effects of cigarette smoking are significantly greater for pregnant women compared to their non-pregnant counterparts because of this habit's detrimental effect on fetal development.

In order to situate my discussion within its proper contextual framework, it will be necessary to distinguish between two often problematic and overlapping terminologies. *Hispanic* is the term most commonly used in literature to refer to individuals who trace their cultural heritages from countries where the majority populations speak Spanish. Principally, these countries are found in Central and South America, Mexico, the Caribbean. At times the term refers to natives of Spain. Conversely, however, the term *Latino* is rapidly being recognized as the more politically appropriate term and affirmative terminology. Thus, I have opted for the term *Latino* as a more representative description of the group being studied.

Prevalence of Smoking and Age of Initiation

Hispanic Health and Nutrition Survey (HHANES) data of Puerto Rican, Cuban, and Mexican-American women showed that Latinas who smoke regularly usually start smoking before age 20, which was comparable to the age of onset for the general population (Sandoval, 1994). The national trend indicates that women are beginning to smoke at progressively younger ages (U.S. Department of Health and Human Services, 1989). The need to create programs to educate Latino youths about the risks of smoking

is highlighted by the substantial number of Latino adolescents who engage in smoking (Dusenberry, Epstein, Botvin, & Diaz, 1994). The prevalence of cigarette smoking appears to be rising among Latinas (Pletsch, 1991) as smokers initiate the habit at earlier ages.

The decrease in age of initiation of smoking should be a focal point of concern for interventions that are developed for Latino subgroups because of the large percentage of Latinos who are under age 17 (36% versus 26% in the general population). The median age for non-Hispanic whites is about 35 years while it is 26 years for Hispanics (Policy and Research, National Coalition of Hispanic Health and Human Services Organizations, 1995). Additionally, the birth rate for Hispanic teens outnumbers that of any other ethnic group with 17% of babies being born to women under age 20 in 1991 (Smith, & Weinman, 1995).

During the last several years, cigarette companies have concentrated their advertising campaigns on minority communities in order to ensure their economic survival (Ramirez & Gallion, 1992). Many of these commercials and advertisements are created to appeal to young people. If left unmonitored by adequate interventions and counter-campaigns, current trends of early onset of smoking forewarn the rise of cigarette smoking in youthful Latino populations. Level of acculturation appears to also impact the age of initiation, with more highly acculturated Latinos having greater smoking rates at younger ages than less acculturated Latinos (King, Borrelli, Black, Pinto, & Marcus, 1997).

Awareness About the Risks of Cigarette Smoking

Although Latinos are generally less addicted to smoking than non-Hispanic white smokers, they are also less knowledgeable about its adverse effects (Winkleby, Schooler, Kraemer, Lin, & Portmann, 1994). One possible explanation for why Latinos are less informed about the risks of smoking cigarettes is because they receive medical treatment more frequently for existing problems rather than for preventive care (King, Borrelli, Black, Pinto, & Marcus, 1997).

Some studies have shown that awareness about the risks of smoking is related to primary language spoken (Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1994). Primary language spoken can be used as an indicator of level of acculturation, with less acculturated Latinos being more likely to speak Spanish as their primary language, but being less likely to know about the many risks of smoking.

Research has also revealed that when Latinos seek medical assistance, health care providers are less likely to advise them to quit smoking than non-Hispanic white patients (Gilpin, Pierce, Johnson, & Bal, 1993). It has been shown that such variances are not due to physician and patient language barriers (Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1994). The discrepancy between the smoking cessation recommendations of health care providers for Latino and white patients appears even more egregious when one considers that numerous studies indicate that patients would be more likely to quit smoking if their doctors were to advise them to do so (King, Borrelli, Black, Pinto, & Marcus, 1997; Sandoval, 1994; Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1994).

It is important that pregnant Latinas be informed by their health care providers about the hazards of smoking. However, there are limited opportunities to increase

their knowledge about the consequences of smoking during this most crucial time. Latinas are 3.5 times more likely than their white counterparts to seek prenatal care during the latter stages of pregnancy or not at all, rather than during the first few months of the gestational period (Policy and Research, National Coalition of Hispanic Health and Human Services, 1995).

Differences Between Latinos and Non-Latino White Smokers

Formerly, smoking cessation interventions that worked positively for non-Hispanic white populations were thought to be equally effective for minority populations (Policy and Research, National Coalition of Hispanic Health and Human Services, 1995). Research has since revealed that there are differences in the smoking habits of distinct ethnic groups that are inextricably tied to cultural nuances. It is now recommended that health care providers, clinicians and researchers develop interventions that are sensitive to variations that may exist among diverse ethnic and cultural subgroups (King, Borrelli, Black, Pinto, & Marcus, 1997). An example of a cultural difference in smoking prevalence is demonstrated by Latinas being less addicted to cigarettes than their white counterparts, smoking an average of 7 cigarettes per day versus the white female average of about 19 cigarettes a day (King, Borrelli, Black, Pinto, & Marcus, 1997).

Research has also revealed that Latinas and white women usually smoke because of different cues. While Latinas tend to engage in smoking because of emotional or social cues, white women smoke more often because of habitual cues (Perez-Stable, Marin, & Posner, 1998). In one qualitative study, Latinas explained that they smoke when they are confronted with difficulties or while they associate with

family members or friends who smoke (Pletsch & Johnson, 1996). These results support the findings that Latinas frequently smoke because of emotional or social contexts rather than from force of habit.

Studies have revealed that Latino smokers who have limited levels of acculturation are less likely than their white counterparts to have the positive stereotypes about smokers that are promoted by cigarette companies' media campaigns. Such advertisements are commonly found in mainstream society. Paradoxically, more highly acculturated Latinos share many of the beliefs about smokers that are typically found in the general population (Marin, Perez-Stable, Otero-Sabogal, Sabogal, & Marin, 1989). This point re-emphasizes the need to create smoking cessation programs and interventions that are specifically geared for young people because younger Latinos tend to be more highly acculturated than older Latinos.

Parent and Partner Smoking Patterns

Another variation that exists between white and Latino smokers is that low educated white smokers are more likely to have close personal relationships with other smokers (i.e. living with a smoker or having close friends who smoke) than Latino smokers (Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1994). Having fewer associates as smoking companions may partially explain why Latinas are more likely to be influenced to quit smoking by family members and close friends. The level of attention given to familial opinions about smoking is another difference between white and Latino smokers.

Research has revealed that Latinas place greater emphasis on the influence of partners and family members who object to their cigarette smoking habit as motivators

for quitting than their white counterparts do (Perez-Stable, Marin, & Posner, 1998). Smoking cessation interventions and programs that are created for Latinas should incorporate information and strategies that focus on the family oriented cultural values that are common in Latino communities.

Measures of Addiction

Various studies have investigated measures of addiction that impact the smoking rates of diverse populations. Research has shown that Latino smokers have lower levels of addiction compared to white smokers. Elevated levels of addiction in white populations have been demonstrated by the difference in the average number of cigarettes smoked per day. One study revealed that while Latinas smoked an average of 7 cigarettes per day, while white women's daily smoking rate was about 19 cigarettes (Perez-Stable, Marin, & Posner, 1998). Analogous smoking patterns were revealed in other studies that examined the prevalence of smoking in diverse populations (King, Borrelli, Black, Pinto, & Marcus, 1997; Marin, Perez-Stable, Marin, Sabogal, & Otero-Sabogal, 1990).

Another measure of addiction that provides empirical evidence of smoking prevalence includes the number of minutes that pass after smokers awake before they have their first cigarette of the day. More highly addicted smokers allow fewer minutes to pass before satisfying their urge to have a cigarette after awakening. One study supported evidence of white smokers being more highly addicted to cigarettes than Latino smokers by revealing that 55% of white participants smoked their first cigarette soon after rising versus 26% of Latino participants (Marin, Perez-Stable, Marin, Sabogal, & Otero-Sabogal, 1990). Additionally, non-Hispanic white smokers averaged

smoking their first cigarette 90 minutes after they awaken while Latino smokers waited an average of 180 minutes before smoking.

Evidence of lower levels of addiction among Latino smokers versus their white counterparts is also demonstrated by variations in the cues that trigger smoking in each population. Research has revealed that white smokers are more likely to smoke when triggered by habitual cues like talking on the telephone, drinking alcoholic beverages or coffee, and after eating, compared to Latino smokers, who are more often triggered by emotional or social cues like being at a party or feeling happy or sad (Perez-Stable, Marin, & Posner, 1998). Habitual cues result in greater levels of addiction because they establish smoking at regular intervals during daily routines.

Socio-economic Status (SES) and Pregnant Latino Populations

Census data from the 1980s revealed that half of Latinos in the United States live in inner city urban locations, and that about 30% of Latinos live below the poverty level (Sandoval, 1994). Results from the 1994 National Health Interview Survey showed that people who have not completed high school and individuals who live below the poverty level are more likely to smoke than more educated people and individuals with higher income status (U.S. Department of Health and Human Services, 1996). Additionally, studies with racially diverse samples revealed a lower level of education among Latino participants compared to white participants (Polednak, 1994). Interventions developed for pregnant Latino smokers who live in urban locales should consider the impact of limited education and low SES on smoking patterns and prevalence rates during pregnancy.

Pregnant Latinas, like many women from populations where there are high rates of low SES, frequently seek prenatal care during the advanced stages of pregnancy or not at all. Research has revealed that in spite of receiving substandard prenatal care because of late or no medical attention, the birth outcomes of pregnant Latinas is comparable to that of white families (Policy and Research, National Coalition of Hispanic Health and Human Services Organizations, 1995).

One study that included a sample of Mexican-American and white women revealed that although many Mexican-Americans experienced socioeconomic disadvantages, they have the same low levels of infant mortality and low birthweight that white women of higher income status experience (Guendelman & Abrams, 1993). The positive birth outcomes happened in spite of many late prenatal care cases. The study attributed the healthiness of Mexican-American babies in part to some of the mothers decreasing the use of tobacco and alcohol during pregnancy and lactation periods. White women, however, smoke and drank less only during lactating periods.

The study's sample was only inclusive of Mexican-American and white women and thus, the altered prevalence of smoking during pregnancy in the Mexican-American population does not indicate whether or not pregnant women from other Latino subgroups follow analogous patterns of smoking cessation. Currently, very little is known about the smoking rates of pregnant Latinas (King, Borrelli, Black, Pinto, & Marcus, 1997). Another study that included a sample of Latinas from several subgroups found that the concern for the health of their babies and the influence of family members who disapproved of smoking during pregnancy deterred them from continuing to smoke heavily while pregnant (Pletsch & Johnson, 1996).

Differences in Smoking Patterns Among Latino Subgroups

Attention to the necessity of identifying cultural predictors of smoking that are specific to diverse ethnic groups without considering variations that may exist among specific subgroups yields only a partial understanding of the many variables that are influenced by cultural factors. More recently, researchers and clinicians have acknowledged the need to not only distinguish the cultural nuances of diverse populations, but also to recognize variances among their ethnic subgroups. Like English speaking individuals who are from the United States, Europe, Australia, and Canada, Latinos share a common language but have many historical differences that shape their distinct identities. Likewise, various patterns and prevalence rates of cigarette smoking are also distinguishable among Latino subgroups.

Results from the Hispanic Health and Nutrition Survey data (HHANES) revealed that Puerto Rican women had the highest prevalence of smoking among Latinas (ages 12-49) of child bearing age (33.5%), followed by Mexican-Americans (23.2%), then Cuban-Americans (22.6%) (Pletsch, 1991). Although National Health Interview Survey data indicated that white women have an overall higher rate of smoking than Latinas, 28% versus 19%, (Center for Disease Control, 1994) a careful review of prevalence rates of smoking in Latino subgroups based on specified age ranges presents a very different picture. It is 42% for Puerto Rican women who are in their *prime child bearing years*, ages 20-29 (Pletsch, 1996), and 23% and 25% for Mexican-American and Cuban-American women who fall into similar age categories.

The surprisingly high smoking prevalence rates of Latinas of prime reproductive ages reinforce the perspective that smoking cessation interventions are needed for

pregnant women in Latino communities. Although a previously mentioned study explained that members of at least one Latino subgroup (Mexican-Americans) often reduce or terminate cigarette smoking during pregnancy, research has revealed that women frequently resume smoking after their babies have been born (McBride, & Pirie, 1990).

Smoking during postpartum periods poses multiple risks to infants and to older children who inadvertently become passive smokers. Adverse effects include respiratory problems, vulnerability to colds, asthma, and numerous other preventable diseases (U.S. Department of Health and Human Services, 1994). Smoking cessation interventions that are developed for women during pregnancy should also address postpartum smoking to prevent post-natal relapse (Ruggiero & De Groot, 1998). One smoking cessation intervention that exemplifies the inclusion of women who are in both pregnancy and postpartum stages was developed based upon the theoretical foundation of the Transtheoretical Model (Ruggiero, Redding, Rossi, & Prochaska, 1997).

This proposed study will be based on the data set previously used by Ruggiero and De Groot (1998). It will investigate predictors of smoking for a multi-ethnic sample and will focus exclusively on Latino and white participants. Predictor variables will include ethnic identity, one composite measure of addiction, partners who smoke, SES, and parents who smoke. The composite measure of addiction will include the following variables: number of cigarettes smoked per day, the length of time that passed after waking before the smoker had her first cigarette, whether or not the participant smoked while ill, whether or not the participant inhaled while smoking, and the number of years the participant had been smoking.

Major Hypotheses

1. We can predict whether women in the total sample will have quit smoking based on knowledge of: ethnicity, SES, level of addiction, whether parents smoke, whether partners smoke.
2. Among Latinas, we can predict whether women will have quit smoking based on knowledge of: SES, level of addiction, whether parents smoke, whether partners smoke.
3. Among white women, we can predict whether women will have quit smoking based on knowledge of: SES, level of addiction, whether parents smoke, whether partners smoke.
4. Latinas will be more likely to quit smoking earlier in the study than white women.
5. White smokers will demonstrate stronger levels of addiction than Latina smokers.
6. There will be significantly fewer Latinas with parents who smoke than white women.
7. Latina and white smokers will show no statistical difference between smoking status of partners.
8. White participants may have higher SES (education and income) levels than Latina participants, but differences will not be statistically significant.

Method

Participants

The sample of this study included 198 women who presented for prenatal appointments at six urban obstetrics clinics in Southern New England between 1995 and 1999. The sample included women who self-identified as Latina or as non-Latina white

individuals. Total number of white participants was 142 and total number of Latinas was 56. The mean age of participants was 24.5 years. Eligibility requirements of participants included: presenting for prenatal care at one of the six urban obstetrics clinics utilized in the study, and whether they could be classified as current smokers, or recent quitters (recent quitters were defined as participants who had quit smoking less than one year prior to contact). Biochemical evaluations were performed to test the carbon monoxide levels of all the participants. These evaluations measured and confirmed the accuracy of participant responses.

Measures

Socio-economic status (SES). SES was determined from participant responses to the following questions: “What is your household gross yearly income? “ (see Appendix question # 12), and “How many years of school and/or college have you completed ?” (see question # 7).

Measures of addiction. Five questions were used to assess level of addiction. These items tapped number of cigarettes smoked (see question # 30), years of smoking (see question # 32), ability to refrain from smoking when it is required to do so (see question # 33), ability to refrain from smoking while ill (see question # 35), and period of time after rising before having first cigarette (see question # 37). A single composite measure was determined from this set of variables.

Smoking status. Smoking status was determined from participant responses to the following questions: “ Are you currently a cigarette smoker ?” (see question # 1), “Were you ever a smoker?” (see question # 2), and “Have you smoked cigarettes within the last 6 months?” (see question # 3).

Parents' current smoking status. Parents' current smoking status was assessed by the following question: "Does either of your parents smoke?" (see question # 18).

Partner's current smoking status. Partner's current smoking status was assessed by the following question: "Does your partner (if any) smoke?" (see question # 15).

Procedure

Participants were initially screened by a questionnaire that assessed whether or not they were eligible for the study (eligibility included being categorized as current smokers or recent quitters). Participants signed a consent form to indicate their agreement to participate in the research project. Participants had up to six different contacts and were compensated with a \$10 gift certificate to a local department store for each visit. Questionnaires were completed at prenatal visits either before or after participants saw their health care providers. This study will exclusively focus on baseline data from a survey that was administered during the first contact with participants. Total number of items in the baseline survey for this sub-project is 58.

Three strategies were employed to increase the accuracy of participant responses. First, the questionnaire was administered within the context of a smoking cessation intervention. All participants who enrolled in the study did so with the understanding that they would receive an intervention that would help them to quit smoking and therefore, were more likely to provide accurate responses about their habit. Second, interventionists performed biochemical analyses of the carbon monoxide levels of all women who enrolled in the study. These evaluations confirmed or disconfirmed the accuracy of participant responses. Third, a multiple choice format was used for smoking status to increase reporting accuracy of participant responses, as demonstrated

by Mullen and Carbonari (1991) who found that multiple choice questions resulted in improved accuracy in smokers' disclosures.

Data Analysis

Three logistic regressions were performed. The first examined whether we could predict whether the participants were classified as having quit smoking or not based on ethnicity, SES, level of addiction, and whether parents smoke, or partner smokes. The second logistic regression examined whether we could predict smoking quit status among Latinas based on SES, level of addiction, and whether parents smoke, or partner smokes. The third and final logistic regression examined whether we could predict smoking quit rates for white participants based on SES, level of addiction, and whether parents smoke, or partner smokes.

The five items related to addiction that comprised the composite score used for the logistic regression analyses were comparable to five out of six of the questions used for the Fagerstrom Test for Nicotine Dependence (FTND). Research has found that the FTND is comparable or superior to the Fagerstrom Tolerance Questionnaire (FTQ) regarding determining level of addiction, and it was therefore used as a model for this study (Payne, Smith, McCracken, McSherry, & Antony, 1994; Kozlowski, Porter, Orleans, Pope, & Heatherton, 1994; Pomerleau, Carton, Lutzke, Flessland, & Pomerleau, 1994).

The five items included: minutes to the first cigarette of the day, the ability to refrain from smoking in places where it is forbidden, the number of cigarettes smoked per day, the ability to refrain from smoking while ill, and whether participants smoked

more during the first two hours of the day than during the rest of the day. In this study the composite score was referred to as Fagerstrom 1.

Four chi-square analyses were performed to compare the Latino and white groups on several variables: a) whether more white participants smoked than their Latino counterparts; b) whether significantly fewer Latino participants had parents who smoked than white participants; c) whether or not there is a statistical difference between smoking among the partners of Latino women versus white women; and d) whether or not there is a statistical difference between the SES levels of white and Latino participants.

Finally, one MANOVA was performed to examine the seven measures of addiction to determine whether there is a statistical difference in the addiction levels of white and Latino smokers. The questions that were employed to investigate the five measures of addiction are outlined in the previous section labeled “Measures”. Any demographic variables that distinguished and the two groups were used as covariates.

Results

The total sample was comprised of 198 pregnant women, 56 Latinas and 142 white participants. The sample included women with primarily low-income status who were recruited from six obstetrics clinics in an urban northeastern metropolis. The average age of both Latina and white participants was 24.5 years. Most of the sample’s participants did not work outside the home, or live with their partners. The average gestational age was 18.7 weeks for Latinas and 21.7 weeks for white women. See Tables 1 and 2 for more information about descriptive variables.

Hypothesis # 1

It was hypothesized that we can predict whether women in the total sample would have quit smoking based on knowledge of: ethnicity, SES, level of addiction, parents smoking status, and partner's smoking status. In order to test this, a logistic regression analysis was conducted on the total sample to determine the extent to which these variables account for the relationship between race (Latinas vs. white women) and participants' smoking status. See Table 3 for results.

A logistic regression analysis was performed using SAS with smoking status as outcome and five predictor variables: race, income, Fagerstrom1 (measures of addiction), parents' smoking status, and partner's smoking status. Data from 198 women were used for the analysis. Missing data appeared to be randomly distributed across categories of outcome and predictors. The analysis deleted 38 observations due to missing values for the response or explanatory variables. The sample included 56 Latinas and 142 white women.

A test of the full model including all five predictors was not significant, $\chi^2(5, N = 160) = 8.20, p > .05$. Results of the full model test indicated that the predictors did not reliably distinguish between current smokers and recent quitters in the overall sample. The results of the first logistic regression analysis revealed that the five predictor variables could not project the smoking status of participants from the overall sample, which included both Latina and white participants.

Hypothesis # 2

It was hypothesized that among Latinas, we can predict whether women would have quit smoking based on knowledge of: SES, level of addiction, whether parents smoke, and whether partners smoke. A logistic regression analysis was performed with

SAS to test this hypothesis using four of the five predictor variables that were included in the first logistic regression analysis: SES, Fagerstrom1, parents smoking status, and partners smoking status. Smoking status was the outcome or dependent variable. This logistic regression analysis was conducted exclusively on the Latina sample in order to determine the relationship between the four predictors and the smoking status of Latina participants. See Table 4 for results.

Data from 47 women were used for the analysis. Nine observations were deleted due to missing values for the response or explanatory variables. A test of the logistic regression model including the four predictors was not significant, $\chi^2(4, N=47) = 7.06, p > .05$. Results indicated that the predictors did not reliably distinguish between current smokers and recent quitters in the Latina sample. This logistic regression analysis revealed that the four predictor variables could not project the smoking status of Latina participants.

Hypothesis # 3

It was hypothesized that among white women, we can predict whether participants would have quit smoking based on knowledge of: SES, level of addiction, whether parents smoke, and whether partners smoke. A logistic regression analysis was performed with SAS to test the four predictor variables included in the second logistic regression analysis: SES, Fagerstrom1, parents smoking status, and partners smoking status. Smoking status was the outcome variable. This logistic regression analysis was conducted exclusively on the white sample in order to determine the relationship between the four predictors and the smoking status of white participants. See Table 5 for results.

Data from 113 women were used for the analysis. Twenty-nine observations were deleted due to missing values for the response or explanatory variables. A test of the logistic regression model including the four predictors was not significant, $\chi^2(4, N = 113) = 5.56, p > .05$. Results indicated that the predictors did not reliably distinguish between current smokers and recent quitters, and thus could not predict the smoking status of white participants.

Hypothesis # 4

It was hypothesized that Latinas would be more likely to quit smoking earlier in the study than white women. To test this, a chi-square analysis was performed to determine whether or not there was a relationship between the racial identification of the participants (Latina vs. white), and whether or not they could be categorized as current smokers or recent quitters (see Table 6). The chi-square analysis result revealed that there was no significant relationship between race and smoking status. White and Latina participants had comparable ratios of current smokers and recent quitters. If Latina participants had quit smoking significantly earlier than their white counterparts this would have been revealed by a higher prevalence of recent quitters among Latinas than among white women.

Hypothesis # 5

It was hypothesized that white smokers would demonstrate stronger levels of addiction than Latina smokers. In order to test this, a MANOVA was performed to determine if indicators of level of smoking addiction differed by ethnicity of participants (Latina vs. white). The measures of addiction included: number of cigarettes smoked per day, number of minutes to the first cigarette of the day, and

number of years smoked. MANOVA results indicated that there was a significant difference between the addiction levels of white and Latina smokers, $F(3, 186) = 2.82$, $p < .05$. See Tables 7 for results.

Three univariate tests were performed to identify which variables contributed to the significant findings. White women were found to smoke significantly more cigarettes per day than their Latina counterparts. Results revealed that Latina participants smoked an average of 9.7 cigarettes per day ($SD = 8.3$) while white participants smoked an average of 14 cigarettes per day ($SD = 9.5$; $t = 2.86$; $df = 1$; $p < .05$). This outcome was consistent with the results of other studies included in the literature review. No statistical difference was found between the number of years that Latina and white participants smoked, nor was there a significant difference for number of minutes to the first cigarette of the day. See Table 8 for results.

Two chi-square analyses were performed to separately test the ability of white and Latina participants to refrain from smoking while ill, which is another indicator of level of addiction. See Table 9 for results. This was done according to their race and smoking status (whether or not they could be classified as current smokers or recent quitters). No relationship was found between the smoking status of participants and the ability to refrain from smoking while ill for either of the two groups. The results of these chi-square analyses did not confirm that white participants had higher levels of addiction than their Latina counterparts (see Figure 2).

Hypothesis # 6

It was hypothesized that there would be significantly fewer Latinas with parents who smoke than white women with parents who smoke. A chi-square analysis was

performed to test this hypothesis. Results revealed that there was no significant relationship between the race of the participants and their parents' smoking status (see Figure 1). A second chi-square analysis revealed no relationship between the smoking status of Latina and white participants, and their parents smoking status. A third chi-square analysis was conducted on the smoking status of white participants versus their parents smoking status. The chi-square was not significant (see Table 9). The results of the three chi-square analyses indicate that there was no relationship between whether or not the participants smoked and whether or not their parents smoked.

Hypothesis # 7

It was hypothesized that Latina and white smokers would show no statistical difference between the smoking status of their partners. A chi-square analysis was performed to test this hypothesis. The chi-square analysis revealed significant results ($\chi^2 = 4.8$; $df = 1$; $p < .05$) confirming that there was a relationship between the race of the participants and their partner's smoking status. See Table 9 for results. White women were more likely to have partner's who smoked than Latina participants (70% versus 52%). See Figure 1. Chi-square analyses were also performed to evaluate whether there was a relationship between the smoking status of the participants and their partners smoking status within white and Latina groups. Findings were not significant.

Hypothesis # 8

It was hypothesized that white participants may have higher SES (education and income) levels than Latina participants, but that differences would not be statistically significant. In order to test this, a chi-square analysis was conducted to evaluate the relationship between race and income. The chi-square analysis results were significant

($\chi^2 = 8.4$; $df = 3$; $p < .05$) indicating that white smokers had significantly higher levels of income than Latina smokers.

A t test was also performed in order to identify whether there was a significant difference in the years of education of the Latina and white participants. Results were not significant. The chi-square analysis and t test indicated that although Latinas were equally educated as white women, they were earning less than the white participants.

Discussion

Results indicated that we cannot predict Latina and white participants' smoking status based on knowledge of: SES, level of addiction, the smoking status of their parents, the smoking status of their partners, and their ethnic identities. Differences were predicted due to the results of previous research which revealed that compared to non-smokers, female smokers were more likely to: be white, have lower socioeconomic status, have higher levels of addiction, and among white women, have close relationships with individuals who smoke. The findings from the previous studies were used as predictors of smoking status for the three logistic regression analyses that were performed.

A possible explanation for why the logistic regression analyses did not yield expected results is that the analyses focused on predictors of smoking status in a sample where all of the participants were *current smokers* or *recent quitters*. This differed from the smoking status categories of previous studies that included *current smokers* and *non-smokers*. Unlike the participants in this study, individuals who were classified as non-smokers in previous studies were frequently *never-smokers*, or people who had quit smoking many years before.

In this study, the *recent quitter* group included anyone who had quit smoking prior to the screener interview (as early as one year prior to the interview or as late as one day before it). The broad range of this category, and differences between non-smokers of previous studies and recent quitters of this study, may have resulted in variations that affected the predictability of the outcomes of the three logistic regression analyses.

Besides demographic information, participants of this study shared one important variable that may also account for the unpredicted results of the logistic regression analyses: being pregnant. Most of the studies cited in the literature review did not involve pregnant populations. The majority of women enrolled in the intervention were somewhat motivated to quit smoking because of their interest in the health and welfare of their unborn babies. Many of the women had decreased the number of cigarettes that they smoked per day in order to minimize harm to fetal development.

Recent quitters may have been as addicted to smoking as the participants who smoked, but may have temporarily quit smoking to decrease potential harm. Recent quitters may have also been motivated to quit smoking in order to feel more comfortable during the months of pregnancy. Smokers often report feeling nauseous if they smoke while pregnant. The impact of the changes in the smoking habits of pregnant women may have prevented the predictor variables from being able to project the smoking status of the participants.

Some of the participants who fell into the recent quitter category might have been better categorized as *interim quitters* because of the probability of their return to

smoking during postpartum periods. Previous studies have found that many pregnant smokers resume their smoking habit after delivering their babies (Ruggiero & De Groot, 1998). This pseudo-quit status may also have made it more difficult to distinguish between the smokers and recent quitters in this study. As a result, this also may have effected the predictive value of the variables used to perform the logistic regression analyses.

The fourth hypothesis was that Latinas would be more likely to quit smoking earlier in the study than white women. This hypothesis was not supported. The prediction was made based upon the findings of previous studies that revealed that Latinas are highly influenced by the opinions of partners and family members regarding their smoking habit (Perez-Stable, Marin, & Posner, 1998). Although Latinos are often less knowledgeable about the risks of smoking than white individuals, the dangers of smoking are at least marginally known. The premise on which the fourth hypothesis was made was that, unlike white participants, family members of pregnant Latinas were likely to pressure them to quit smoking during their months of pregnancy, and that many of them would acquiesce to the wishes of their family members.

In order to test this hypothesis, we considered the smoking status of the Latina and white women separately. The outcome of the analysis revealed that there were comparable ratios of smokers and recent quitters in both samples (white and Latina). Distinctions between this study's current smokers, and recent quitters (who may possibly be better classified as interim quitters) must again be emphasized as a possible explanation for why there were comparable ratios of women in both smoking status categories. The point that most of the women enrolled in the study had a potential

motivation to quit smoking because of concern about the health of their babies should again be noted as possibly influencing the results of these analyses. Many more white participants achieved a quit status in this study than might have occurred in a smoking cessation intervention that was not designed for pregnant women. This may partially explain why there were comparable ratios of Latina and white participants in both smoking status categories unlike the findings of previous studies where white women smoked more than their Latina counterparts.

The women who enrolled in the intervention used for this study may have been advised by their obstetricians to quit smoking, and as a result may have become interested in being recruited for a smoking cessation intervention. Research has revealed that Latinas frequently seek prenatal care during late gestational periods or not at all (Policy and Research, National Coalition of Hispanic Health and Human Services Organizations, 1995). The white women who were recruited for the intervention may have sought prenatal care before the Latina participants, and therefore, may have received the advice to quit smoking during earlier gestational periods. This may have impacted the number of Latinas who smoked at the point of recruitment for the intervention versus the number of white participants who smoked.

Additionally, one major study revealed that doctors are less likely to advise Latino patients to quit smoking than white patients (Gilpin, Pierce, Johnson, & Bal, 1993). This occurred even when language was not a barrier of communication between doctors and patients. This may also explain why unlike white participants, pregnant Latinas smoked about the same number of cigarettes per day as non-pregnant Latinas (rather than fewer). Latinas who were advised to quit smoking may have also been less

concerned about the impact of smoking on the health of their babies because smoked moderate quantities of cigarettes per day. This may have created a false sense of confidence that “ just a few cigarettes a day couldn’t possibly hurt my child”.

The fifth hypothesis correctly predicted that white smokers would demonstrate stronger levels of addiction than Latina smokers. The results of this prediction mirrored the results of previous studies where white participants smoked more than their Latina counterparts. White participants who fell into the current smoker category smoked an average of 14 cigarettes per day versus 9 cigarettes smoked per day by Latina participants. It is important to note two significant findings that this study revealed. Pregnant Latina participants smoked more than the average number of cigarettes found in previous research involving Latina smokers (9 cigarettes per day versus 7 cigarettes per day). This may be especially significant given that the current participants were pregnant whereas previous research was based on non-pregnant Latinas. Paradoxically, pregnant white participants smoked less than the average number of cigarettes smoked by white female smokers of previous studies (14 cigarettes per day versus 19 cigarettes).

A possible explanation for why this study revealed that white participants had lower smoking rates while Latinas had higher smoking rates than seen in the literature is that Latinas are generally less educated about the risks of smoking than white women. Most members of mainstream society are informed about some of the negative results of smoking including pulmonary cancer, heart disease, and various other illnesses. However, Latino communities remain largely uneducated about the numerous risks of

smoking, particularly as it relates to the health of children during stages of prenatal development.

A second explanation for differences found in the smoking patterns of the white and Latina participants pertains to when they started their prenatal care. Some Latinas may have had their first obstetrics appointment during later gestational periods than their white counterparts and therefore, may not have had sufficient time to alter their smoking habits before having their first smoking intervention interview (which provided the data for this study). As a result, white women may have altered their smoking habits prior to their enrollment in the smoking cessation intervention while Latinas maintained their pre-pregnancy smoking rates.

The sixth hypothesis was that there would be fewer Latinas with parents who smoked than white women. It was not supported. This hypothesis was predicted because research has revealed that smoking prevalence rates are increasing among *younger, more highly acculturated* Latinos (King, Borrelli, Black, Pinto, & Marcus, 1997). These findings suggest that younger Latinos are more likely to smoke than their parents. There is an increasing number of cigarette advertisements in Latino communities designed to attract young smokers who will smoke for the duration of their lives (Ramirez & Gallion, 1992). The literature suggests that the media campaigns sponsored by cigarette companies in Latino communities are being promoted in order to compensate for the decreasing number of smokers in mainstream society.

Younger Latinos may be more influenced by non-Latino culture than their elders because of higher levels of assimilation. The connection between non-Latino societal influences and the increasing smoking rates among Latinos was the premise on which

the sixth hypothesis was made. Two chi-square analyses were separately performed for Latina and white participants to determine whether there was a relationship between the smoking status of the participants and the smoking status of their parents. Results of the analyses revealed that there was no relationship between whether or not the participants smoked and whether or not their parents smoked. Another chi-square analysis revealed that there was no relationship between the race of the participants and whether or not their parents smoked. These findings showed that the white and Latina women had comparable ratios of parents who were smokers and non-smokers.

The seventh hypothesis predicted that Latina and white smokers would show no statistical difference between the smoking status of partners. The hypothesis was also not supported. This prediction was made because the results of several previous studies. First, research has revealed that Latino males have higher smoking rates than Latinas. Some studies have also revealed that besides smoking more than their female counterparts, Latino males have higher smoking rates than white women and white men (VanOss Marin, Perez-Stable, Marin, & Hauck, 1994).

Second, previous studies found that unlike white female smokers, smoking among Latinas often occurs in social circles instead of being triggered by habitual cues (Perez-Stable, Marin, & Posner, 1998). Partners and family members of the participants of this study were arguably their primary social influence. Third, research has revealed that white women are more likely to live with or have close relationships with smokers than Latina women are (Winkleby, Schooler, Kraemer, Lin, & Fortmann, 1994). Research findings that Latino males smoke more than white men and women, the social influence factor of Latina smoking habits, and white women being more likely to have

close relationships with smokers suggested conflicting possible results. Therefore, it was predicted that there would be no difference between the smoking rates of partners since it was possible that the combined findings of previous studies would nullify any differences in outcome.

The final hypothesis predicted that white participants would have higher SES (education and income) levels than Latina participants, but differences would not be statistically significant. This hypothesis was partially supported. No significant differences were found between the education levels of Latina and white participants (each group averaged about 11 years) but differences were found between the income levels of the groups. White women were found to be wealthier than their Latina counterparts.

The sample can be described as a low income sample. The household income of most of the participants was less than \$15,000 (about 82% of Latinas and 68% of white women). Largest variances in the income of both samples were seen in the highest earning category of this population. Less than 2% of the Latina participants earned \$25,000 or more while 15% of the white participants earned \$25,000 or more. There are several possible explanations for why there was such a differential in the incomes of the white and Latina participants while they had comparable levels of education.

It should be noted that all participants had to perform the intervention in English and therefore, could communicate in English at least fairly fluently. As a result, differences in earning could not be attributed to poor communication skills or language deficiencies. Discriminatory hiring practices are common barriers that often preclude minority individuals from ascending economic ladders as quickly as white individuals

who have similar professional and academic qualifications. This is one possible explanation for why Latina participants earned significantly less than white participants who had comparable levels of education.

Nurturing the family is an integral part of the role of women in Latino communities. Another possible explanation is that the mother role priority may have encouraged Latina participants to focus on the care of their children rather than have full time employment outside of the home. Discrepancies that occurred in the demographic variables cannot be interpreted definitively. To do so would require information and feedback from the participants themselves, which of course is not possible to achieve.

Implications

First, more programs need to be created to educate Latinas of childbearing age about the risks of smoking during pregnancy. The dangers that passive smoke poses to children should also be a focus of smoking interventions. This would potentially yield more productive intervention than waiting for Latinas to seek obstetric care before informing them about the harmful effects that smoking has on fetal development, since Latinas frequently do not seek prenatal care, or wait until late gestational periods to do so.

Second, Latinas are influenced by partners and family members who object to their cigarette smoking habit, and are motivated to quit smoking because of these close relationships. More interventions should be developed that incorporate the support of family and close friends of Latina individuals, particularly because their partners are less likely to smoke than the partners of white female smokers. Third, white and Latina

women should be more educated about the dangers of passive smoke due to the prevalence of smoking among their parents and partners, and the high smoking relapse rate that occurs during postpartum periods.

Fourth, smoking cessation interventions that are tailored for pregnant populations should emphasize that even low smoking rates pose a threat to children during prenatal and postpartum periods. The white smokers in the study may have decreased the number of cigarettes that they smoked per day while Latina smokers maintained their smoking rates. Medical providers and researchers should more frequently inform pregnant women about the dangers of smoking even small quantities.

Finally, future studies should clearly distinguish differences between recent quitters, interim quitters, never-smokers, and non-smokers due to possible variances in testing outcomes. More research should be performed that examine cultural and ethnic patterns of smoking in order to develop interventions that are tailored for diverse populations.

Limitations

One limitation of the study is that data were gathered from a single geographical location, namely an urban location in Southern New England. Therefore, results of this study cannot be generalized to areas beyond this geographical region and are not universally representative of the smoking patterns of pregnant white and Latino smokers. A second limitation is that participants agreed to enroll in the study and had the option to refuse participation. Given that the participants were volunteers, we cannot generalize to women who opted not to enroll in the study. Additionally, the data

are based on a relatively small Latina sample. Future studies should include larger samples.

A final limitation of the study is that data were collected from six hospital and clinical sites in the same geographical region. Women who participated had to seek prenatal care from one of the sites in order to be enrolled in the study. As mentioned in the literature review section of this proposal, many pregnant Latinas receive late or no prenatal care (Policy and Research, National Coalition of Hispanic Health and Human Services Organizations, 1995). Therefore, the results of this study do not include the smoking patterns of pregnant women who chose not to seek medical attention, or elected to seek prenatal care from a site that was not utilized for this research project.

Despite these limitations, this study adds to our knowledge of the smoking habits of pregnant Latina and white individuals. Continued research involving diverse samples of pregnant smokers is an essential step towards developing effective smoking cessation interventions. Through these efforts, we will be able to eliminate “umbrella” interventions and develop appropriate programs for specific populations.

Table 1

Descriptive Data for Continuous Variables

Variables	Latina			White		
	<u>M</u>	<u>SD</u>	<u>n</u> ^a	<u>M</u>	<u>SD</u>	<u>n</u>
Gestational Age (weeks)	18.7	6.9	55	21.7	7.8	142
# cigarettes/day	9.7	8.3	52	14.0	9.5	138
Years Smoked	8.8	5.8	52	9.5	6.0	138
Age	24.5	5.8	56	24.5	5.7	142
Years of Education	10.8	2.2	51	10.9	1.9	135
Minutes to 1 st cigarette	96.0	117.3	52	83.1	120.1	138

a: variations in ends is accounted for by missing data

Table 2

Descriptive Data for Categorical Variables

Variables	Latina		White	
	Frequency	Percent	Frequency	Percent
<i>Income</i>				
\$0 - \$5,000	14	25.5	38	27.3
\$5,000 - \$14,999	31	56.4	56	40.3
\$15,000-\$24,999	9	16.4	24	17.3
\$25,000 up	1	1.8	21	15.1
<i>Living Status</i>				
Alone	15	26.7	27	19.0
With Partner	14	25.0	53	37.3
With family/friends	27	48.2	62	43.6
<i>Marital Status</i>				
Single	43	76.7	98	69.0
Married	7	12.5	24	16.9
Separated/Widowed/ Divorced	6	10.7	20	14.1
<i>Work Outside Home</i>				
Yes	9	16.1	41	29.1
No	47	83.9	100	70.9
<i>Parents Smoke</i>				
Yes	37	67.2	101	71.6
No	18	32.7	40	28.3
<i>Partner Smokes</i>				
Yes	25	52.0	82	70.1
No	23	47.9	35	29.9
<i>Smoking Status</i>				
Current Smoker	35	62.5	98	69.0
Recent Quitter	21	37.5	44	31.0

Table 3

Logistic Regression Analysis of Smoking Status in Latina and White Sample

Variables	β	Wald test	Odds Ratio
Race	-0.62	2.59	0.53
Income	-0.35	3.75	0.70
Fagerstrom 1	-0.05	0.25	0.94
Parents Smoking	-0.53	2.16	1.71
Partners Smoking	0.24	0.46	1.28

$n = 160$

$\chi^2 = 8.2; df = 5; p > .05$

Table 4

Logistic Regression Analysis of Smoking Status in Latina Sample

Variables	β	Wald test	Odds Ratio
Income	0.02	0.00	1.02
Fagerstrom 1	0.33	1.47	1.39
Parents Smoking	1.51	4.88	4.55
Partners Smoking	0.41	0.40	1.51

 $\underline{n} = 47$ $\chi^2 = 7.06; df = 4; p > .05$

Table 5

Logistic Regression Analysis of Smoking Status in White Sample

Variables	β	Wald test	Odds Ratio
Income	-0.41	4.21	0.65
Fagerstrom 1	-0.13	1.06	0.87
Parents Smoking	0.14	0.09	1.15
Partners Smoking	0.25	0.30	1.28

$n = 113$

$\chi^2 = 5.56; df = 4; p > .05$

Table 6

Chi-Square Analyses of Mixed Sample

Variables	χ^2	df
Race by Current Smoker Status	0.37	1
Race by Parent Smoking Status	0.54	1
Race by Partners Smoking Status	*0.02	1
Race by Income	0.10	1

*p<.05

Table 7

Means for Measures of Addiction

Variables	Latina			White		
	<u>M</u>	<u>SD</u>	<u>n</u>	<u>M</u>	<u>SD</u>	<u>n</u>
# cigarettes/day	9.7	8.3	52	14.0	9.5	138
Years Smoked	8.8	5.8	52	9.5	6.0	138
Minutes to 1 st cigarette	96.0	117.3	52	83.1	120.1	138

Table 8

Univariate Test Results for Measures of Addiction

Dependent Variables	df	F Value
# Cigarettes/day	1	8.22*
Years of Smoking	1	0.50
Minutes to 1 st Cigarette	1	0.44

* $p < .05$

Table 9

Chi-Square Analyses of Separate Latina and White Samples

Variables	<u>Latina</u>		<u>White</u>	
	χ^2	df	χ^2	df
Income by Smoking Status	0.50	3	*0.00	5
Difficulty to Refrain from Smoking by Smoking Status	0.82	1	0.56	2
Parents Smoking Status by Participants Smoking Status	0.06	1	0.46	1
Partners Smoking Status by Participants Smoking Status	0.80	1	0.78	1

*p<.05

Figure # 1
Percent of Latina and White Women's Parents' and Partner's Cigarette Smoking

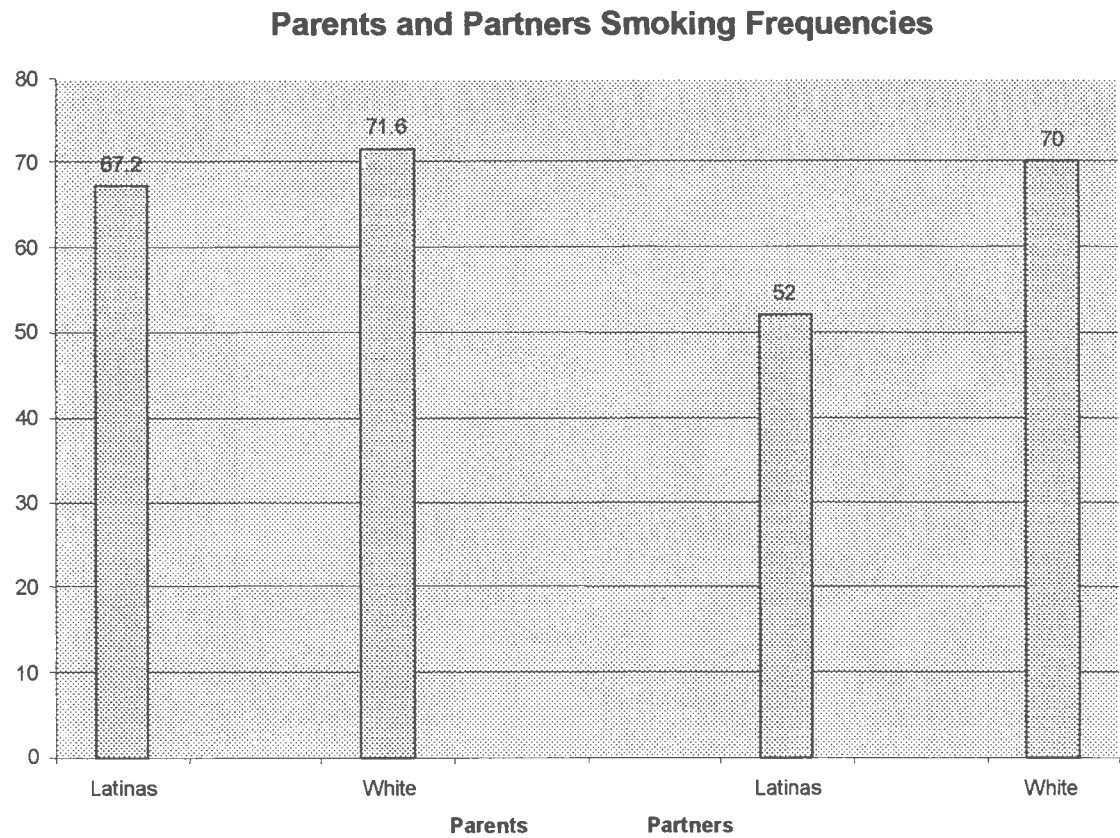
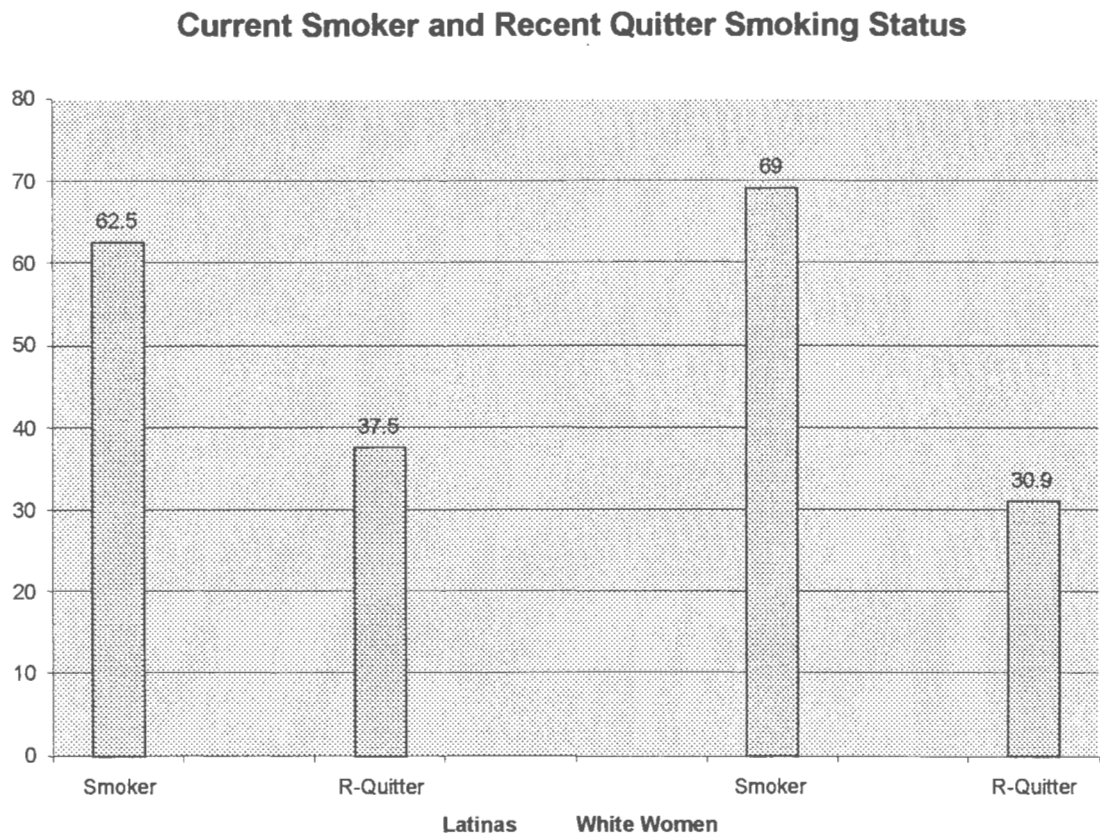


Figure # 2
Percent of Current Smokers and Recent Quitters Among Latina and White Women



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Appendix

Time 1 Interview

ID # _____

Date: _____

Interventionist: _____

Clinic: _____

FOR ALL SUBJECTS

DEMOGRAPHIC INFORMATION

1. Full name: _____

2. What is your birthdate? _____

3. What is your age? _____ years

4. What is your gestational age? _____ weeks

5. What is your expected date of delivery? _____

6. What is your race?

- _____ Hispanic
- _____ African American
- _____ White
- _____ Asian
- _____ Native American
- _____ Other: _____

7. How many years of school and/or college have you completed? _____
(For example, high school graduate equals 12 years.)

8. Do you work outside the home? ____ Yes ____ No

9. If yes, what is your occupation? _____

10. What is your marital status? _____ Single _____ Married _____ Sep./Wid./Div.

11. Are you living: _____ Alone _____ With your partner _____ With Family/Friends

12. What is your household (woman alone or woman plus partner) gross yearly income?
(All should answer).

_____ under 5,000	_____ 35,000 to 44,999
_____ 5,000 to 14,999	_____ 45,000 to 54,999
_____ 15,000 to 24,999	_____ 55,000 to 64,999
_____ 25,000 to 34,999	_____ over 65,000

_____ Not applicable (give reason: _____)

If your partner lives with you, please answer the following:

13. How many years of school and/or college has your partner completed? _____
(For example, high school graduate equals 12 years)

14. What is your partner's occupation? _____

Smoking History

15. Does your partner (if any) smoke? _____ Yes _____ No

16. Do any close co-workers smoke? _____ Yes _____ No

17. Do any close friends smoke? _____ Yes _____ No

18. Do either of your parents smoke? _____ Yes _____ No

FOR QUITTERS

Time 1 ONLY

19. How long ago did you quit smoking? _____ days/weeks
20. In general, before quitting, how many cigarettes were you smoking each day?
_____ cigarettes
21. How long did you smoke? _____ years
22. Within 6 months before quitting, did you find it difficult to refrain from smoking in places where it was forbidden (e.g., in church, at the library, in cinemas, etc.)
0. No 1. Yes
23. Within 6 months before quitting, did you smoke more during the first 2 hours of your day than during the rest of the day?
0. No 1. Yes
24. Within 6 months before quitting, did you smoke if you were so ill that you were in bed most of the day?
0. No 1. Yes
25. When you were smoking, did you inhale?
0. No 1. Sometimes 2. Always
26. How many minutes after you woke up did you smoke your first cigarette?
_____ minutes
27. Which cigarette of the day did you hate most to give up?
28. What was your usual brand of cigarettes? _____
29. Check off all the following that applied to your brand:
- | regular | lights | ultralights |
|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

FOR CURRENT SMOKERS
Addiction Index

30. Think about your smoking during the last week, how many cigarettes did you smoke per day? _____ cigarettes
31. How long ago was your last cigarette? _____ minutes/hours
32. How many years have you smoked? _____ years
33. Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., in church, at the library, in cinemas, etc.)
0. No 1. Yes
34. Do you smoke more during the first 2 hours of your day than during the rest of the day?
0. No 1. Yes
35. Do you smoke if you are so ill that you are in bed most of the day?
0. No 1. Yes
36. When you are smoking do you inhale?
0. No 1. Yes
37. How soon after you awake do you usually smoke your first cigarette?
_____ Hours _____ Minutes
38. Which cigarette of the day would you hate most to give up?
(Please be specific) _____
39. What is your usual brand of cigarettes? _____
40. Check off all the following that apply to your brand:
- _____ regular _____ lights _____ ultralights

STAGE OF CHANGE ASSESSMENT FORM *(First Contact)*

1. Are you currently a cigarette smoker?
(Smoked at least one cigarette per day during the last 7 days.)
- ☐ Yes (Here only: Skip 2 and 3)
☐ No
2. Were you ever a smoker?
- ☐ Yes
☐ No STOP – ineligible for study
3. How long ago did you quit smoking?
- (0) ☐ less than 1 month (1) ☐ 1 month (2) ☐ 2 months
(3) ☐ 3 months (4) ☐ 4 months (5) ☐ 5 months
(6) ☐ 6 months
4. Are you seriously considering quitting within the next 6 months?
(Anchor the time frame by naming the appropriate month: if it is July now, Are you seriously considering quitting by next January?) Phrase both questions.
- ☐ Yes ☐ Don't Smoke
☐ No:
- 4a. If not, are you considering cutting back? ☐ Yes ☐ No ☐ Already did.
- 4b. Are you seriously considering quitting during the remainder of your pregnancy?
- ☐ Yes ☐ Don't Smoke
☐ No
5. Are you planning to quit in the next 30 days?
- ☐ Yes ☐ Don't Smoke
☐ No
6. In the last year, how many times have you quit for at least 24 hours?
- 0 1 2 3 4 5 6 7 8 9 (if more than 9 circle 9)
- 6a. How many of these were because of your pregnancy?
- 0 1 2 3 4 5 6 7 8 9 (if more than 9 circle 9)
7. Have you smoked any cigarettes, even a puff, in the past 24 hours?
- ☐ Yes ☐ No
8. Have you smoked any cigarettes at all, even a puff, in the past 7 days?
- ☐ Yes ☐ No

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